

WATER QUALITY

Project title: Trophic Classification of Selected Lakes in Yellowstone National Park

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Objective: To evaluate the trophic state of lakes in Yellowstone National Park.

Findings: Lake: Trophic State; Lake South of Nymph Lake: Mesotrophic; Nymph Lake: Strongly Mesotrophic; South Twin Lake: Slightly Mesotrophic; North Twin Lake: Mesotrophic; Beaver Lake: Strongly Mesotrophic; Swan Lake: Mesotrophic; Harlequin Lake: Slightly Mesotrophic; Goose Lake: Slightly Mesotrophic; Blacktail Pond: Mesotrophic; Lake of the Woods: Strongly Mesotrophic; Hot Lake: Slightly Oligotrophic; Pool by Morning Glory Pool: Oligotrophic.

Nymph Lake is classified as Strongly Mesotrophic because of the high in-lake total phosphorus and should be of concern. Beaver Lake is also classified as Strongly Mesotrophic because of the high inflow total phosphorus and should also be of concern. While North Twin Lake has an overall classification of Mesotrophic, there should be some concern with the Hyper-eutrophic Vollenweider's model (high inflow TP) results.

Lake South of Nymph Lake, South Twin Lake, Swan Lake, Harlequin Lake, and Blacktail Pond are all Mesotrophic or Slightly Mesotrophic. These are healthy, appropriately productive lakes with no cause for concern at the present time.

The Strongly Mesotrophic State of Lake of the Woods was determined from only one month of data (one sample). Therefore, this lake needs further study in order to determine if it is of concern. Data are also scarce for Pool by Morning Glory Pool, Hot Lake, and Goose Lake. However, the available data for these lakes are fairly consistent, so these lakes should not be of concern for now.

Project title: Missouri–Madison Water Quality Monitoring Study

Principal investigator: Mr. Frank Pickett

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Objective: Obtain baseline water quality data for use in assessing the quality of water in the mainstem Madison and discharges from PPL Montana Dams Hebgen and Madison and to provide information on New Zealand Mud Snail populations over time.

Findings: n/a

Project title: Yellowstone River Basin Study Unit National Water Quality Assessment

Principal investigator: Mr. Thomas Quinn

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Objective: The overall goals of the NAWQA Program are to 1) describe current water quality conditions for a large part of the Nations freshwater streams and aquifers, 2) describe how water quality is changing over time, and 3) improve our understanding of the primary natural and human factors affecting the water quality.

Findings: Samples were collected at two sites during this reporting year, Soda Butte Creek, site 06187915, and at an Unnamed Tributary to Blacktail Deer Creek. At Soda Butte Creek water quality samples were collected for a variety of parameters such as common anions, nutrients, trace metals, and chlorophyll a. Samples from Soda Butte Creek were sent to the USGS National Laboratory in Lakewood, Colorado for analysis. Data collected in FY2001 will be published in the USGS Report, Wyoming Water Resources Data Report, and FY2001, which will be published in early 2002.

At Blacktail Deer Creek samples collected included water-quality, algae, macro-invertebrates, fish tissue and community, and habitat measurements. This data was collected in cooperation with the USEPA as part of the Western EMAP program. All data collected at Blacktail Deer Creek is available from the EPA.

Project title: Wyoming Reference Stream Project

Principal investigator: Mr. Jeremy ZumBerge
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Objective: The objective of the Wyoming Reference Stream Project is to collect water quality, habitat, and biological data at least-impacted stream sites within each ecoregion of Wyoming. Data from these reference sites is used as a benchmark against which the water quality, habitat, and biological condition of other sites are compared. Middle Creek was selected as a reference site for the Middle Rockies ecoregion and has been monitored annually since 1993.

Findings: Middle Creek data has been incorporated into a statewide database for use in development of biological criteria. This project is expected to continue for a minimum of several more years.

Project title: Reference Stream Monitoring—Long-term Trend Sites

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Additional investigator: Laura Gianakos

Objective: Assess long-term trends in water quality and biological condition at a minimally impacted stream (Middle Creek) in the Middle Rockies ecoregion. These data assist in establishing baseline information that can be used to assess water quality and biological condition at other streams within the Middle Rockies ecoregion.

Findings: Middle Creek is one of several reference quality streams in the Middle Rockies ecoregion being monitored on an annual basis.